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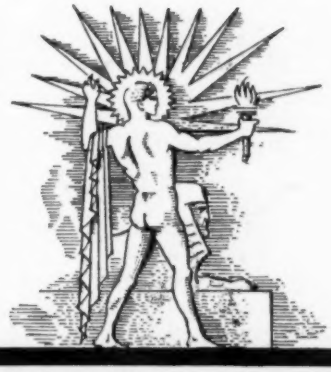
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



May 9, 1942

Windmills Go Modern

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A SCIENCE SERVICE PUBLICATION

Do You Know?

A bear is smaller than a baby porcupine at birth.

Spaniards in Mexico discovered natives waterproofing their clothes with *rubber.*

Germs were first seen by man in 1676 when Anthony Leeuwenhoek made a one-lens microscope.

Vitamin B_1 is now used to render insulin-shock treatment for mental disease safer and more effective.

The same quantity of industrial *alcohol* can be produced from 40 bushels of grain as from one ton of raw sugar.

Americans dislike the *Japanese* more than they do any other people, according to a survey reported by Nathan Schoenfeld, Columbia University psychologist.

Scientific *poultry* management has increased egg-laying so that seven hens now lay more eggs than nine did in 1909, according to the Department of Agriculture.

The tropical fruit *guava,* grown in Florida, contains concentrated vitamin C and pro-vitamin A, when in the seedling stage, the State Experiment Station has discovered.

Sassafras may prove to be a source of dyes to replace coal dyes which have become scarce because of lack of chemicals, according to A. S. Shead, University of Oklahoma chemist.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article*

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WAR

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ZOOLOGY

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In Iceland, *"stuka"* is a girl, not a dive-bomber.

Loss of only 20% of the body's *water* content causes death.

Green *wood* has 10% to 35% less heating value than dry wood.

The *muscles* of a human being account for 40% of his body weight.

Parasitic *bumble bees* lay their eggs in the nests of other, more industrious bees.

Beaver dams are built with such strength and precision that horses can cross some of them.

The *horse* is the mainstay of modern circuses.

Cow's milk contains three to four times as much calcium as human milk.

The *pronghorn antelope* is one of the swiftest of American animals—it has been paced with automobiles at 40 miles per hour.

The star, *Canopus,* emits more than 2,500 times as much light as the sun, according to Dr. Jesse L. Greenstein of the University of Chicago.

A test batch of bills which contained *nylon* instead of silk threads was released recently by the U. S. Treasury —nobody spotted the difference.

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PHYSICS

Mesotron Is Shortest-Lived Thing in Whole Universe

New Extension of Life Span Still Leaves It With Only 2.8 Millionths of a Second; Born in High Air

THE LIFE of the mesotron, middleweight atomic fragment, is probably the shortest span of existence in the universe, despite new measurements, reported to the American Physical Society in Baltimore which have given it quite a boost. Experiments carried out at Echo Lake and at Denver, Colo., last year gave it a life of 1.6 millionths of a second, in substantial agreement with previous estimates. New and more accurate measurements this year give it a life of 2.8 millionths of a second.

The experiments were made by Drs. Bruno Rossi and Kenneth Greisen of Cornell University, Drs. Joyce C. Stearns and Darol K. Froman of the University of Denver and Dr. Phillip G. Koontz of Colorado State College.

Mesotrons are born high in the atmosphere through some action of the incoming cosmic rays. But few of them live to reach the earth. In fact, many of them expire in passing from the level of Echo Lake to the level of Denver, a drop of about 5,000 feet.

However, the new experiments confirmed what was previously found, that the faster the mesotron travels, the longer it lives—as measured in our time. But measured in its own time, mesotron time, all have about the same life span, 2.8 millionths of a second. This is called the "proper" lifetime of the mesotron, and is obtained from the experimental times by correcting them for the relativity effect of velocity on time.

Thus for a mesotron a fast life means a long life, contrary to the case for human beings. But if you were a fast-moving mesotron you would know nothing about this. Consulting your own watch—a perfect timepiece—you would find that you lived not a whit longer than if you stood stock still—2.8 millionths of a second in either case.

But observers on the earth, consulting their own timepieces—also perfect—would find that your watch was ticking more slowly—also that your little heart was ticking more slowly.

And if, doubting your own watch, you stopped to compare it with that of one of the observers, you would find both going at exactly the same rate. Thus, by your own heart beats, your "proper life" is always the same whether you travel or stand still, supposing you're a mesotron.

Science News Letter, May 9, 1942

Grating Made in Sections

A DIFFRACTION grating that distinguishes between a new star and a planetary nebula was described by Dr. R. W. Wood of the Johns Hopkins University. The grating, 18 inches in diameter, has been made to fit the 18-inch Schmidt photographic telescope at Mt. Palomar, California, where the 200-inch telescope, the world's largest, is to be located. The grating throws a rainbow spectrum like a spectroscope, and shows a nitrogen band for the nebula very near the bright hydrogen line. This band is not seen with an objective prism.

The whole surface of the 18-inch disk is covered with straight parallel grooves or lines, accurately spaced and 1,500 to the inch. The grooves are so shaped that nearly all of the light is thrown into the spectrum and the highest intensity is in the red region.

A novel feature of this grating is that it is built up in sections like a mosaic. These sections measure 4 x 6 inches and are replicas of one master grating.

The grating when placed over the object glass of the telescope, draws out into a spectral streak every object in the field of the telescope.

Another 18-inch grating has been made with but 800 lines to the inch in order to give short spectra; this is required when the field is crowded with many stars, for otherwise the spectra overlap. This grating throws most of the light in the blue end of the spectrum, and will be used for classifying faint stars according to their spectra.

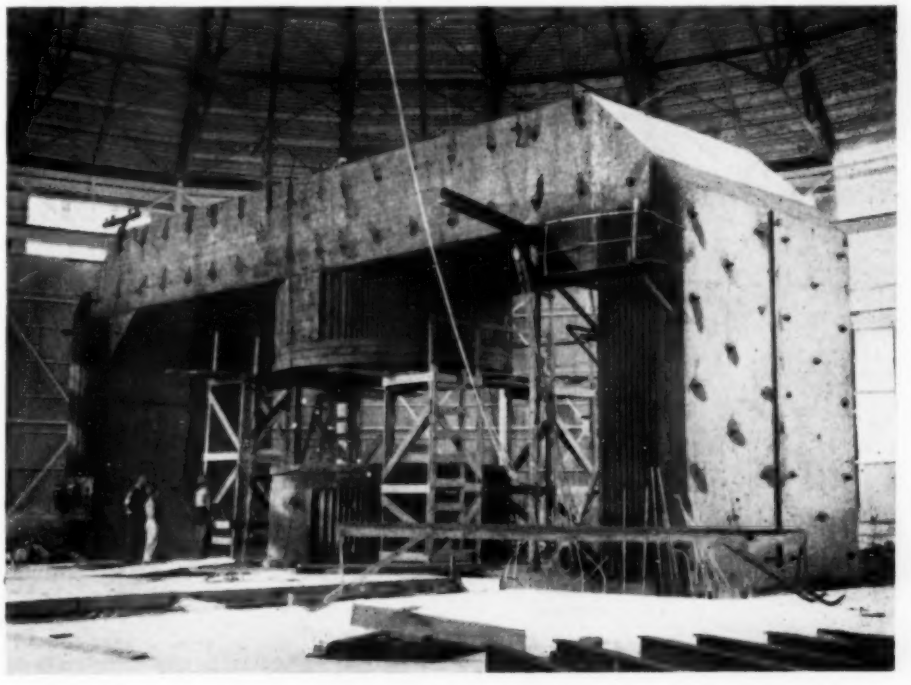
Dr. Wood is to make a 36-inch grating for the Mount Wilson Observatory.

Science News Letter, May 9, 1942

PHYSICS

Berkeley 100,000,000-Volt Cyclotron Now Has Roof

FOR some time the great 100,000,000-volt cyclotron being constructed for the University of California has stood out in the open. Now it has a roof over its head. The heavy work of erecting the



GREATEST CYCLOTRON

4900-ton magnet is finished, and the installation now of the more delicate parts of the apparatus requires shelter.

When finished, this machine will whirl deuterons, the central cores of heavy hydrogen atoms which are twice as heavy as the protons or central cores of ordinary hydrogen atoms, up to a velocity of 60,000 miles per second. It will also whirl alpha-particles, the central cores of helium atoms, up to the same velocity. But since these are twice as heavy and have a charge twice as great as the deuterons, they will emerge with twice the energy or with 200,000,000 electron volts each.

If the new cyclotron is as efficient as those of the past have been, the issuing atomic beam will contain 3 to 5% of the electrical energy put into the machine. Simple steam engines, like those used for hoisting, do not do much better.

Science News Letter, May 9, 1942

PLANT PHYSIOLOGY

New Synthetic Plant Hormones Induce Seedless Fruit Formation

Addition of Halogens to Weak Organic Acids Produces Compounds With Unique Properties

NEW synthetic growth-promoting substances, or plant hormones, many times more powerful than those now in use experimentally and by greenhousemen, have been prepared at the Boyce Thompson Institute for Plant Research by Dr. P. W. Zimmerman and Dr. A. E. Hitchcock. Applied to plants in the form of vapor, spray, emulsion, lanolin paste, or added to the soil, they induce profound changes in growth, and they can also induce the formation of seedless fruits from unpollinated flowers at points on the stem a foot or more from the place of application. Treated plants are so changed that sometimes they look like quite different species.

The new hormones are prepared from various mild organic acids, which have no effect on plants in their ordinary state, by the addition of atom-groups containing chlorine, iodine or bromine, either singly or in combination. One very effective compound of this sort is known as dichlorophenoxyacetic acid. It has been found to be fully 300 times more effective in inducing formation of seedless fruit than indolebutyric acid, one of the synthetic plant hormones now widely used. Solutions as weak as 10 to 25 parts (by weight) in a million parts of water have been found most effective as seedless-fruit inducers.

In all, eleven different compounds of the new class have been prepared. All of them seem to share the same great power over the growth and development processes of plants, and all seem to depend on the addition of one or more of the chlorine-iodine-bromine triad of elements (halogens, the chemists call them) to weak organic acid foundations.

Drs. Zimmerman and Hitchcock warn against rushing into attempts at practical application without further experimentation: "Considering the activity of these new growth-modifying hormones and their capacity to cause extreme types of distortion, caution should be exercised in their practical application. In view of the tendency to include various types of hormones in fertilizers, fungicides, insecticides, and other commercial preparations, the use of these new compounds should be preceded by extensive experimentation to make sure that they will not be detrimental to crops. Phenoxy compounds are known to have insecticidal value and now that they are also known to be plant hormones there might be a tendency to incorporate them in commercial sprays and fertilizers. The idea would be good but the results might be disastrous."

Science News Letter, May 9, 1942

EFFECTS BOTH BAD AND GOOD

The new halogenated compounds cause both abnormal leaf growth and the setting of seedless fruit from unpollinated flowers remote from point of application.

PSYCHOLOGY

War-Blinded Men Employed In British Aircraft Works

BLIND men, some of them war-blinded in this war, are making good on jobs in the British aircraft industry, it is revealed in a British journal, *Aeroplane*.

So great is the concentration of these men on their jobs, that they work faster than men with sight, it is reported. The men were employed by Philips and Powis Aircraft, Ltd., as an experiment. Now they are being kept on because they are doing really valuable work, and the employment of the blind is recommended to other aircraft concerns.

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MEDICINE

Anti-Pellagra Vitamin Found Remedy for Meniere's Disease

Nicotinic Acid, Like Many Other Chemicals, Dilates Blood Vessels, But Patients Do Not Become Resistant

NICOTINIC acid, the anti-pellagra vitamin, has proved to be a successful remedy for Ménière's disease, Dr. Miles Atkinson, of the New York Hospital and Cornell University Medical College, reports (*Journal, American Medical Association,* May 2).

Ménière's disease is a disabling condition characterized by prostrating dizzy spells, ringing in the ears and even deafness. Only certain cure for the condition so far discovered has been a delicate and difficult nerve-cutting operation.

Search for a cure for the condition without surgical operation led to the announcement by Mayo Clinic physicians two years ago of histamine as a chemical remedy for the disease.

Nicotinic acid, however, succeeds in many more cases than histamine, in Dr. Atkinson's experience. He reports recoveries under nicotinic acid treatment of patients who had relapsed after temporary improvement or gotten worse on histamine treatment.

The histamine treatment was based on the theory that the patients were sensitive to this chemical which is normally produced in the body, somewhat as hay fever patients are sensitive to pollens. The treatment consisted in giving doses of histamine to desensitize the patients.

Less than one-fourth the patients, Dr. Atkinson finds, are actually sensitive to histamine. Inexperience with the test for histamine sensitivity, he believes, has led doctors to use the treatment for many patients who are not sensitive to histamine.

At first this treatment seems to help even the large group that are not sensitive to histamine, because this chemical acts to dilate the small blood vessels. But these patients sooner or later develop a resistance or immunity to the histamine action on small blood vessels. Then their small blood vessels become more constricted than ever, and the patients are worse off.

Nicotinic acid, like many other chemicals, dilates the small blood vessels, but patients do not become immunized to its effect, so it continues to help them over long periods, and, of course, it is safe to take for indefinite periods.

A still better chemical remedy for Ménière's disease may be discovered, Dr. Atkinson points out, but nicotinic acid is the best he has yet found.

Science News Letter, May 9, 1942

MEDICINE

Protection Against Poison Ivy Provided By Ointment

U. S. Public Health Service Approves Two Formulas Tested at Two Government Camps and Boys' Camp

AN IMPROVED protective ointment against poison ivy has been developed and proved effective by the U. S. Public Health Service in tests at two government camps and a boys' summer camp.

Active ingredient of the ointment is sodium perborate which oxidizes the ivy poison. The sodium perborate was first used in a vanishing cream base by the Public Health Service, but this base allowed the perborate's oxygen to escape and so the ointment became ineffective after two weeks.

The new ointment made with either of two bases will remain effective for several weeks if kept in a closed container.

The ointment should be thickly applied to exposed parts, such as the hands and face, if necessary, before contact with poison ivy. Clothes must be removed after exposure before the ointment is washed off, otherwise the unprotected skin may be exposed to clothes which have been contaminated. Tools and instruments or clothing which have been used in cutting poison ivy must be decontaminated before being used again. Decontamination can be effected by washing clothes or immersing tools for 15 to 20 minutes in a 1% solution of calcium hypochlorite.

The two formulas were developed by Dr. Louis Schwartz, Dr. John E. Dunn, and Dr. F. H. Goldman of the Public Health Service. The formulas are:

Formula 1

Castor oil	21.5%
Olive oil	21.5%
Lanolin, anhydrous	21.5%
Diglycol stearate	12.9%
Paraffin, refined	8.6%
Boric acid	2.0%
Sodium perborate	10.0%
Duponol WA pure	2.0%

Formula 2

Cetyl alcohol	35.1%
Stearyl alcohol	5.3%
Ceresin	3.5%
Castor oil	20.8%
Mineral oil	21.9%
Duponol WA pure	1.7%
Sodium perborate	10.0%
Boric acid	1.7%

Science News Letter, May 9, 1942

MEDICINE

Cancer Diagnosed Early From Shed Surface Scales

DIAGNOSIS of cancer of the uterus in its early, curable stage is possible through a technic reported by Dr. George Papanicolaou and Dr. Herbert F. Traut of New York to the New York State Medical Society.

The technic depends on the fact that cancers of the uterus shed their surface cells, as trees shed their leaves, as a result of their rapid growth. These scaly bits from the cancer find their way to the upper portion of the canal leading from the uterus where they can be easily collected, spread upon glass slides, stained and examined under the microscope. This is true of cancer in both early and late stages.

Early, unsuspected cancers can be discovered, the doctors stated, by using this method in routine examination of women in the cancer-bearing age.

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MEDICINE

Remarkable Recoveries Cited For Kenny Polio Treatment

Reports of Two Groups of 26 and 28 Patients Show New Method Produces Very Satisfactory Results

FURTHER verification that the Kenny method is the best known treatment for acute infantile paralysis, and evidence that it offers a real hope in this crippling disease, is recorded in the *Journal of the American Medical Association* (April 25).

Devised by the Australian nurse, Miss Elizabeth Kenny, and recently introduced by her in this country, the new treatment has been accepted by the National Foundation for Infantile Paralysis, and in effect, by the American Medical Association.

An editorial in the *Journal* states that "the advances which have been made give assurance of greater preparedness on the part of the medical profession in meeting any outbreaks of the disease which may arise in 1942."

In the *Journal* are reported two new series of cases where Miss Kenny's technique of moist heat and careful exercise gave incomparably better results than the orthodox use of splints and braces in the acute and subacute stages where muscle spasm is present.

The first series is described by Dr. John F. Pohl of Minneapolis, 26 of whose patients were treated under direct advice of Miss Kenny. Dr. Pohl concludes in part that:

"At the end of eighteen months after beginning the Kenny treatment of a series of 26 patients in the acute and subacute stages it can be stated that these patients have all made a far more satisfactory recovery than they would have made by any previously known method. No deformities have occurred, in spite of the complete omission of splinting."

Dr. Pohl recommends that the treatment be immediately adopted as the fundamental treatment of anterior infantile paralysis.

From the Willard Parker Hospital in New York a report of 28 patients who received the Kenny treatment under Dr. Mary M. I. Daly, Dr. Jerome Greenbaum, Dr. Edward T. Reilly, Dr. Alvah M. Weiss and Dr. Philip M. Stimson, supports Dr. Pohl's conclusions. They too recommend the new technique "for patients presenting symptoms of spasm, weakness and paralysis in the acute stage of infantile paralysis."

In the New York hospital, patients who received the Kenny treatment are reported to be "better off in comfort, freedom from atrophy and deformity, rapidity of recovery and possibly in extent of recovery" than those treated in the orthodox manner of splints and braces.

The *Journal* devotes a special editorial to progress in the field of poliomyelitis, commenting that "step by step the battle . . . is being won. The information that has been gained on the nature of the virus and methods of its transfer has been notably extended during the past year. The contributions of physiologists, neuro-surgeons and physical therapists help to overcome the ravages of the disease."

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AGRICULTURE

Peru Is Now Enjoying War Flax-Raising Boom

PERU is enjoying a war-born boom in flax, a new crop for the South American republic. Starting with an experimental hundred acres or so only three years ago, Peruvian planters jumped the acreage to 35,000 for the crop now being prepared for market. Most of Peru's flax will be bought in this country, partly replacing the European imports cut off by the war.

A survey of the new Peruvian flax industry has been brought back to the U. S. Department of Agriculture by Dr. B. B. Robinson of the Bureau of Plant Industry, who recently returned from a tour of the West Coast countries of South America, as a member of a scientific mission studying plant resources of possible use in the joint defense efforts of the Americas.

Peru seems to be exceedingly well adapted for the raising of flax, Dr. Robinson states. Constant sunshine over rich soil, with plenty of water for irrigation leaves the planter nothing to wish for. Flax responds by growing tremendously—six-foot stalks are not at all uncommon.

Techniques for harvesting and handling the flax are still crude, but experience is already indicating the way to improvements, with increased use of machinery. Present scarcity makes it advisable to produce all the flax possible, without waiting for the development of better methods. In fact, Dr. Robinson states, there is a tendency to go through the typical boom-crop cycle and plant as great an acreage as can be seeded, regardless of the prospect of collapse that may occur in post-war readjustment days when the return of European flax sources to the market, together with other factors, can be expected to cause a steep drop in prices.

A curious archaeological discovery was made on one large hacienda, in the course of digging a retting pit for the flax. (Flax is processed by retting, or soaking in water for two or three weeks, to permit the connective tissues of the stalk to decay and free the fiber.) Several feet under ground, a big copper tank, nine feet long, three feet wide and three feet high, bearing a sixteenth-century date, was found. Some years ago, another big copper tank shaped like a soupbowl was found in the same neighborhood. Nobody knows what they were used for.

Elsewhere in his travels, Dr. Robinson studied the growing of hemp in Chile and the harvesting of kapok in Ecuador. Chilean hemp has always had its principal market in England, but some of the crop will now be sent to this country. Regrettably the 1941 crop of kapok, the lighter-than-thistledown fluff used in life-preservers and pillows, was an almost total failure, due to unfavorable weather when the trees were in blossom.

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About 14 pounds of *manganese* are needed to produce a ton of steel.

METALLURGY

Steel as Good as Sweden's Best Can Be Made in Texas

Location of Wood Distillation Plants Near Deposits Of Iron Would Provide the Charcoal Needed for Steel

STEEL smelted with charcoal in the Swedish way, and as good as Sweden's best, is an American product fostered by wartime changes in the world's industrial setup, Dr. Donald F. Othmer, of the Polytechnic Institute of Brooklyn, disclosed.

Swedish steelmakers have always favored the use of charcoal in smelting because the absence of sulfur and other impurities from charcoal resulted in a very pure, high-grade metal. The Nazi war-lords have taken advantage of their position to monopolize all of Sweden's export production, and they may yet overrun Sweden itself. So we are getting no more Swedish steel.

At the same time, war-stimulated demands for two of the principal chemical products of wood, acetic acid and methanol (wood alcohol) have caused a great increase in their production by the American wood distillation industry. By-product of wood distillation is a very high grade of charcoal, excellently suited for quality steel production.

In northeastern Texas there is a great deposit of iron ore that has not been worked hitherto because it is too remote from supplies of coking coal. But all over the region there are forests of post oak, of little value for lumber but very good for wood distillation, and of course yielding high-grade charcoal.

By establishing one or more wood distilling plants in that region, it will become possible to turn out new supplies of the war-needed chemicals, and at the same time to convert part of the now neglected iron ore into the finest steel.

A somewhat similar thing is happening on the Pacific coast. There, a plant belonging to one of the major oil companies, built to convert natural gas into ammonia for explosives and fertilizer, had accumulated a veritable mountain of gas coke, that piled up on the premises simply because there was little market for it in pre-war days. This coke is almost pure carbon, free of sulfur and practically ashless. It is now being converted into briquets, with the high-grade steel market clamoring for them faster than they can be loaded and shipped.

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PSYCHIATRY

Mass Neurosis Revealed In Nazi Scientific Journals

Selections from Supposedly Scientific Journals Reveal Pathology; Vast Mental Hygiene Program Needed

WAR neuroses among Nazi soldiers are treated by sentencing the offenders to hard labor, as close to the front lines as possible.

In German schools, young boys suspected of homosexual trends are first publicly disgraced, then isolated.

These are not rumors. They are the recommendations made by German psychologists and medical men, and published in their own scientific journals. Thirty-five such quotations, culled by Dr. Eugene Lerner of the Psychology Department at Sarah Lawrence College, may be found in the current issue of the *Journal of Psychology*, (April, 1942).

These German quotations reveal a serious condition of mental and emotional disorder, Dr. Lerner believes.

"If pathological thinking of this sort can make its appearance with such frequency in professional, supposedly scientific journals, then the mental health of the community must indeed be in jeopardy," he said.

Immediate action by scientists was urged by Dr. Lerner to plan the gigantic mental hygiene program that will be necessary in Nazi-terrorized and Nazi-indocrinated countries after the war.

Dr. Lerner asks his readers what they would think of the state of public mental health in this country, if they read such statements as the following in our own scientific journals:

"All are carried away with the intoxicating conquest of Europe. The era is one of exuberant excitement. Cultural activities are clothed in ecstacy and removed from the scientific and abstract. The duty of education is to foster and guide adolescent ecstasy."

"Objective truth is less important than cultural stimulation."

"The convention held by our national Psychological Association proved its willingness to follow the conditions prescribed by the Party for every science."

"The topics were strictly empirical, with no scientific . . . experimental, or psychoanalytic investigations."

"Mathematics should be taught, not as a 'general' reality, but primarily in relation to present political . . . life."

"Propensity to specific crimes is inherited." (*Z. pädag. Psychol.*)

"Slums are caused by delinquent inhabitants, not vice versa." (*Mschr. Krim. Biol.*)

"About half the workers who report sick are pure neurotics."

"If the man in mental difficulties cannot find his way through his immediate relationship to God, the Party takes up the task, and here German psychotherapy can help. All Germans—from artists to officers—are born psychologists and teachers in this new calling." (*Zbl. Psychother.*)

In analyzing these and other quotations, Dr. Lerner found the following abnormal personality trends:

1. Excessively dependent attitude, shown in over-valuation of the strength of other individuals, notably the Fuhrer. This indicates "a marked feeling of helplessness and infantile self-devaluation."

2. Compensating for this basic helplessness, sadistic aggression is equally conspicuous, with a great need for superiority and domination; grandiose self-exaltation as a member of the elect, "Nordic" group; and a tendency to put the blame on others which reaches psychopathic proportions in the intensity of hatred toward "Jews, communists, democracies", etc.

3. Other regressive, or infantile, traits include the need for obsessively rigid rules and regulations; the insistence on "joy and ecstasy" and pathological hatred of anything rational or scientific.

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AGRICULTURE

Japanese Gardeners Work At Propagation of Guayule

INTERNED Japanese, camped in California's dry interior, are doing their bit toward the solution of the severe problem of rubber shortage, imposed on the United States by Japan's aggressor rulers. Many of them are skilled gardeners, who until now have had almost a monopoly on West Coast gardening and nursery business. They are now busied in mass experiments in the planting of guayule cuttings, stimulated to produce roots by treatment with artificial growth hormones.

Guayule plants are usually produced from seed. However, if work now going on in plant breeding stations succeeds in producing new strains with higher rubber content, it will be advantageous to propagate them by means of cuttings, just as choice fruit and flower varieties are propagated by means of cuttings or grafts, to keep the quality of the new plants uniform and high. By that time, the interned Japanese will have gained experience and skill in handling the new crop.

The internees, both alien and native born, are reported to be carrying on the job willingly and with good morale.

Science News Letter, May 9, 1942

MEDICINE

Castor Oil, Sulfa Drugs Useful In Skin Diseases

SKIN diseases, notoriously difficult to cure, are now being attacked by such diverse substances as castor oil, the sulfa drugs and concentrated sulfur itself, according to reports to the New York Medical Society.

Castor oil's virtue, apparently, is in preventing skin irritation either by cleansing agents or by ointments containing special medicines for treating skin troubles. Sulfonated hydrogenated castor oil is "an excellent ingredient of detergents (cleansing agents) and ointments," Dr. Shepard Quinby and Dr. George W. Fiero, of Buffalo, reported on the basis of experience with 400 persons, 300 of whom were patients, and the other 100 have served as guinea pigs for tests of any possible irritating property of the oil.

A vaselin containing 30% to 50% of precipitated sulfur healed certain acute skin ailments that were not helped by conventional treatment including the use of soothing lotions and salves, Dr. E. William Abramowitz, of New York City, reported. He has used this preparation of concentrated sulfur in petrolatum for the past five years for cases of pityriasis rosea, a non-contagious skin disease with reddish, scaly patches and fever, and other acute skin ailments of the kind that are difficult to clear up and keep coming back.

Sulfa drugs have been given both in pills and in a fine powder or ointment to be used locally on more than 200 patients at Bellevue Hospital, Dr. Maurice J. Costello, Dr. Abraham M. Rubinowitz and Dr. Simeon E. Landy, of New York City, reported. The patients were suffering from various skin diseases including lymphogranuloma venereum, chancroid, erysipelas, certain pyogenic (pus forming) skin diseases, infectious eczema-like skin trouble, and a burning, itching, blistering skin disease called dermatitis herpetiformis.

Science News Letter, May 9, 1942

ENGINEERING

Hollow Propeller Is Welded on the Inside

A METHOD by which hollow metal aircraft propeller blades can be welded on the inside has been invented by James H. McKee of Pittsburgh, Pa., for which he was awarded U. S. Patent 2,280,337. The rights have been assigned to the Curtiss-Wright Corporation, New York.

The hollow metal propeller to which the invention applies is composed of a front and a back piece that come together in the form of a sharp V at the edges. These must be welded together. If the welding is done from the outside, the welding material does not penetrate sufficiently to form a smooth surface on the inside. If the welding could be done on the inside, the metal when melted would by capillary attraction fill the tip of the V with a smooth, rounded surface, like that which appears at the surface of a liquid that has risen in a narrow crevice.

This feat was accomplished by laying the propeller on its edge and placing short pieces of the welding material in the form of wire along the edge inside. A special furnace, which embraced both sides of the propeller for a small part of its width and for a small part of its length, was used to heat the edge at one place, then slid along to heat it at the next place, and so on. In this way the entire blade was welded from the inside.

Science News Letter, May 9, 1942

IN SCIEN

ZOOLOGY

Sea-Lions May Be Food For Fur Animals on Land

SEA-LIONS, rated as major nuisances by West Coast fishermen because of the number of fish they take, may become eaten instead of eaters, if experiments now being conducted by British Columbia authorities pan out well. There are numerous fur farms along the coast, where foxes and other domesticated fur-bearers expect their meals of meat every day. Sea-lion meat may be the answer.

Principal difficulty so far has been cost of collection. The seal-like animals bask on slippery, wave-washed rocks when they are not actually in the water, making it hard, often dangerous, for rifle-armed hunters to bag them in sufficient numbers to make paying cargoes.

Science News Letter, May 9, 1942

WAR

Parasols Proposed for American Doughboys

JAPANESE troops have had fun poked at them in the past for carrying fans—even though these came in handy during halts on a hot day. Now parasols are proposed for American doughboys, and by an infantry officer, at that!

In the *Infantry Journal* this officer, who modestly signs himself merely Infantry Major, tells of a one-man camouflaged fox-hole cover he has invented, which is built around an umbrella frame. He extends the ribs with coat-hanger wire, replaces the cover with regular camouflage netting, and saws off the handle. To the netting the usual bits of rags, twigs and scraps of grass are tied, to blend with the ground cover where the soldier wants to conceal himself.

From the air, the doughboy in his fox-hole is quite invisible to would-be strafing planes. From the ground, he is also invisible to enemy snipers, even when he tilts the cover up for a quick look-see.

The whole thing can be set up in a matter of seconds, and it adds only a pound to the weight of the field kit.

Science News Letter, May 9, 1942

E FIELDS

PHYSIOLOGY

Sex Perverts Not Lacking In Male Sex Hormone

DRAMATIC transformation of seven "somewhat effeminate," jealous, jittery young men into he-men with beards, an interest in girls and enough ambition to advance in their professions or to get off relief rolls into regular jobs was reported by Dr. Jacob Kasanin, director of psychiatry at Mount Zion Hospital, San Francisco, and Major Gerson R. Biskind, Letterman General Hospital, San Francisco, at the meeting of the California State Medical Society.

These young men had undeveloped male sex glands, but had not "become sexually depraved in the sense of becoming interested in homosexuality," the physicians reported. Treatment with the male sex hormone, testosterone, by implanting "banks" of the hormone in their muscles to supply the deficient amount from their glands, brought about the personality changes reported.

A group of patients examined in connection with Selective Service on account of homosexuality, on the other hand, did not show any evidence of lack of sex hormone secretion.

"This points to the fact," the physicians conclude, "that homosexuality and sexual perversions are probably psychological in origin."

Science News Letter, May 9, 1942

PSYCHOLOGY

Handicapped Child Should Be Encouraged to Develop

EVERYONE'S heart goes out to the handicapped child. Our instinct is to surround him with comfort and protection and avoid all reference to his handicap.

As a result, such a child feels that he is set apart from other children, and the embarrassment which he senses behind our evasions only increases his feeling of inferiority.

"It is far better mental hygiene to approach the training program with a frank and sympathetic recognition of the limitation, and to attempt to solve the child's problem by capitalizing on his assets." This is the advice of Dr. Eric Kent Clarke, Director of the Psychiatric Clinic for Children at the University of Minnesota, in his new book, Mental Hygiene for Community Nursing. (*Reviewed, SNL, this issue*).

Dr. Clarke cites the case of Bernice, whose right arm and leg had been crippled by infantile paralysis. She was brought to school as an invalid by an anxious mother who resisted every attempt of the teachers to develop the child's capacities. The school persisted, however, until Bernice had learned to use both hands. This new ability gave her the incentive she needed to break away from her invalid role at home, and she became a lively, hopeful child eager to develop her capacities.

In another case it was the parents' wisdom that saved a boy from tragedy. Following an accident, he had had both legs amputated below the knee. After the first shock, the family rallied and tackled the problem with sympathy and common sense. Under their encouragement, the boy learned to skate, dance, and take part in athletic games. This young man, now in his twenties, refuses to consider himself handicapped and is living a normal, happy life.

The cruel ostracism that many handicapped children have to face from their schoolmates is a reaction to the child's personality, rather than to his physical limitation. If the child can be taught to accept his handicap, it will be accepted by other children on his own terms.

But if his family regards him as an unfortunate invalid, he will be exposed to needless cruelty later.

Science News Letter, May 9, 1942

ENGINEERING

Portable Steel Overpass Developed by Army

A PORTABLE steel overpass to aid troop and supply transport has been developed by Army engineers.

The overpass can be knocked down to three sections easily hauled on truck trailers and can be reassembled in less than three hours. It can be used at busy intersections where there is a steady flow of traffic in one direction obstructing traffic waiting to cross.

Need for such an overpass was discovered in the Louisiana maneuvers where a flank attack was held up by steady streams of supply and troop traffic. Had the overpass been available the attacking troops could have been moved over the supply trains.

Science News Letter, May 9, 1942

MEDICINE

Sex Prejudice Dying In Medical Profession

HOPE that the already waning sex prejudice against women physicians will be completely erased by the cooperation of women physicians in war work, was expressed by Dr. Sara M. Jordan, Boston physician who is chairman of the Subcommittee on Women Physicians of the Procurement and Assignment Service. She spoke before the Conference on War Demands for Trained Personnel.

The number of women physicians graduating from medical schools during the war is not, however, likely to increase greatly even if there is an increase in the number of women wanting to study medicine, Dr. Jordan predicted. This is because medical schools are limited in their capacity and the need for men medical graduates appears to be predominant.

Science News Letter, May 9, 1942

ENGINEERING

Glass Used to Cushion Concussion From Bombs

A NEW blast-cushioning non-combustible glass fiber material for blacking out war production plants was announced by Owens-Corning Fiberglas Corporation. The material is designed to reduce danger from concussion and to provide protection against the spread of fire caused by incendiary bombs or explosives. Known as Fiberglas OC-9 Board, the new material is composed of fine resilient glass fibers compressed and treated with a binder which gives it sufficient rigidity to serve as a self-supporting fire-resistant material. The material can be faced with glass fiber cloth, plywood or other surfacing materials.

Experience in England has shown that even fairly distant bombing may prove highly destructive to industrial operations by shattering windows, scattering death-dealing glass fragments and disrupting delicate instruments.

Although the concussion-absorbing qualities of the compressed glass fibers can not provide protection against nearby blasts the resilient light-obscuring and protective materials may prove of definite value by absorbing part of the concussion caused by explosions. The Detroit exhibit is the first showing of the use of glass fiber materials for blacking out existing industrial plants.

Science News Letter, May 9, 1942

ENGINEERING

Steel and Fuel Saved for War

Recent Advances in Steam, Water and Wind Power Reduce the Fuel and Metal Needed for Industry

By DR. MORTON MOTT-SMITH

See Front Cover

A KILOWATT saved is a kilowatt earned—for it means that a brand-new kilowatt can be added to the vast amount of electrical power needed to carry on our war production.

One way to save kilowatts is to increase the efficiency of the engines that produce them, thus saving fuel and steel that can be used to produce more kilowatts or to produce more tanks and explosives.

Spectacular advances have been made in recent years in the efficiency of power generators. The most important of these have been described by Dr. Lionel S. Marks, emeritus professor of mechanical engineering at Harvard University, in lectures at several universities and colleges throughout the country. The lectures were given under the auspices of the Society of the Sigma Xi, national fraternity for the promotion of scientific research.

Thus Dr. Marks described a large steam-turbine plant that has attained a thermal efficiency of 33.5% from coal to electrical output, a record for this sort of engine. The engine uses steam at the almost unheard-of temperature of 1000 degrees Fahrenheit and at a pressure of 2300 pounds per square inch. This steam is nearly 300 degrees above the critical temperature, about 705 degrees, at which steam and water refuse to live together.

A few years ago, this development would not have been possible. The metals then available could not be used above 700° because they became too soft, too plastic. But new alloys have been developed that make large scale commercial operation at 1000° feasible. And this is the reason for the higher efficiencies, for the thermal efficiency attainable depends primarily on the top temperature that can be used in the engine.

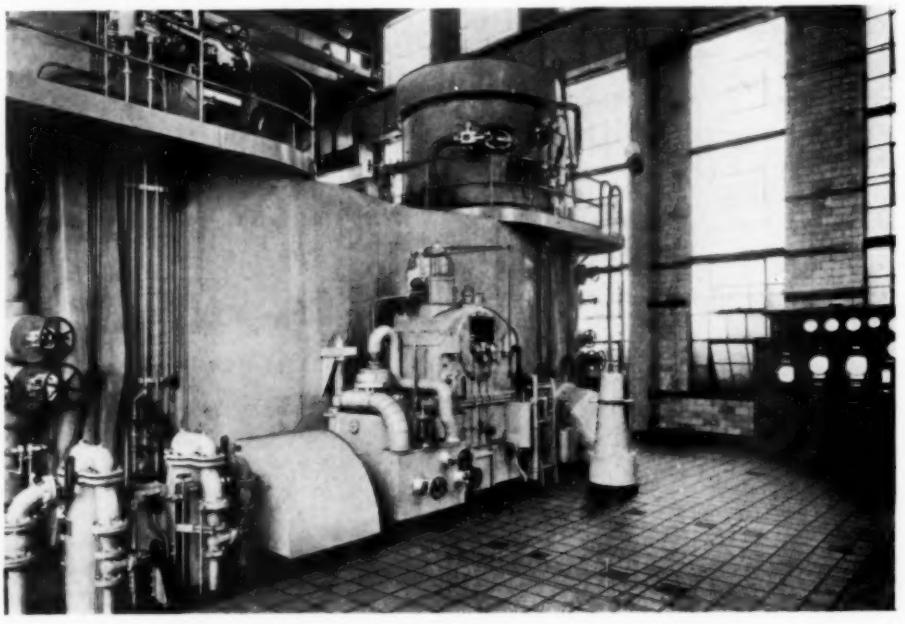
On the other hand, the development of these new alloys has been made possible largely through the extensive introduction of the electric furnace and the induction heater. The electrically heated metal is not tarnished in variable and uncertain ways by the products of fuel combustion blown through the melt. Much higher temperatures can be attained by the use of electrical methods and a far more accurate control of the heating is possible. This increased use of electricity in the metals industries accounts for a large part of the huge demand for the "juice" in the war industries.

But the highest record of efficiency of any plant for the conversion of heat into electrical energy, higher even than the famed Diesel engine, has been made by a mercury-steam turbine. A 20,000-kilowatt plant of this sort has developed a thermal efficiency of 37.5%. And this was not a sudden spurt or a test made under the most favorable conditions. It is based on tests made during 15 months of actual and almost continuous operation. This means that one kilowatt hour or 1-1/3 horsepower-hours of electrical energy were developed for every half pound of coal. Thus a handful of coal would run a 40 watt lamp continuously for a day and a night—24 hours. If you burned the coal in any other way, you could never get so large an amount of light from it.

This dual system, now after 30 years of experimentation brought to perfection, uses mercury vapor in place of steam in the higher temperature range. At 1000°, the pressure of saturated mercury vapor is only 180 pounds per square inch. The vapor is expanded in a turbine down to one pound pressure, at which its temperature is 458°. The vapor is then used to raise steam to 460 pounds pressure and this steam drives another turbine.

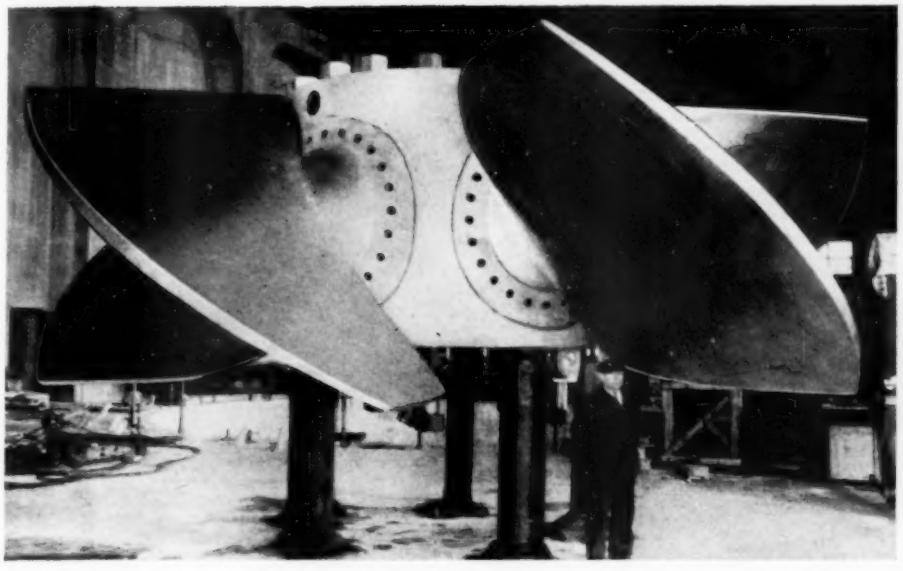
The great advantage of this dual system is that the pressures in the high temperature range are much lower than for steam. Hence they are easier to handle, and permit of lighter construction. This system saves steel as well as fuel.

Many steam plants throughout the country, using only moderate steam pressures, could have their capacity nearly doubled with only one-third more fuel consumption, by superposing on the plant a high pressure steam turbine taking steam at 1200 pounds pressure and 900° temperature, and on top of that a mercury turbine. This statement was made by A. R. Smith, managing engineer of General Electric's turbine division, in an address before the engineering societies of Schenectady. Where high



MOST EFFICIENT

The world's most efficient power plant uses mercury and steam in separate stages and develops 20,000 kilowatts. It gets a whole kilowatt from a handful of coal, ½ pound.



IMPROVED WATER WHEEL

It has blades the pitch of which can be varied, thus giving high efficiency at light loads as well as at full load.

pressure plants already exist, they could be topped simply with the mercury turbine. If both of these plans were applied throughout the country, Mr. Smith estimated, we would get 23½ million more kilowatts for our use.

But the war has stopped the extension of the mercury power plant to many important applications, H. N. Hackett, of General Electric's Construction Engineering Department, declares.

The production of power by the burning of coal under a boiler is a seemingly primitive method, since it was the first used by man with the exception of windmills and water-wheels, but it still provides more than half the power we use today. A good part of the rest is provided by the burning of other fuels, oil, natural gas, wood, etc., under boilers, so that the steam engine is still our mainstay.

Next in importance for large power production is falling water. Although this source supplies only about 4% of our total needs, and could not supply more than a fifth even if every available site were developed, it provides more than a third of our electrical power. This is understandable because water power sites are usually remote from industrial centers, and electrical energy is the one kind that can be transmitted considerable distances.

A notable improvement has recently been made in this field. While the best hydraulic plants have shown an efficiency of 90% in the conversion of water energy into electrical energy at full load, the efficiency is considerably less at reduced loads or lowered water level. A new type of turbine, the Kaplan wheel, maintains high efficiency over a wide range of conditions. This is accomplished by making the blades of the wheel, like those of an airplane propeller, of variable pitch so that the "bite" can be regulated according to load or water level.

The internal combustion engine does not figure in large power production, however useful it may be for automobiles, tanks, airplanes and submarines. Its efficiency is high, far higher than that of the steam engine until the recent developments. But in a transport engine it is capacity, power in proportion to weight, rather than efficiency that counts most, and development has been mostly along this line. No great advances in efficiency have been made except perhaps in the case of the airplane engine, where the load of gasoline to be carried must be considered.

The internal combustion engine was, so to speak, naturally efficient from the beginning, because the fuel was burned inside the engine instead of outside under a boiler, and the top temperature was that of the fire instead of that of the fluid in the boiler. Also no heat went up the chimney. But boilers have lately been so improved that only 8% of the heat goes up the chimney, in place of more than half of it not so long ago.

The remarkable improvement in the steam engine is, in fact, well illustrated by the fact that, starting far behind the

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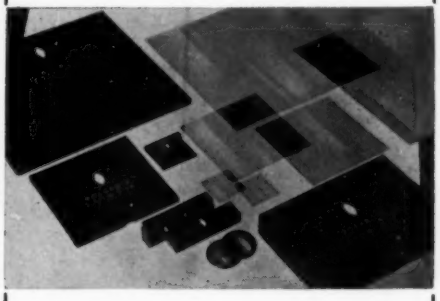

Reduced in price, Polaroid* J-Film may now be used more freely than ever before. It is flexible, durable, easily cut into discs for converting microscopes and projectors into polarizing instruments, making glass testing polariscopes, light-control devices, scientific exhibits, etc.

Typical Prices: Polarized J-Film, 2" x 2", set of 2 with instruction sheet, in leatherette case, No. 320, $1.00. Carton of 25 sets of 2 for group use, with handbook, No. 321, $20.00. Square 12" x 12", No. 328, $12.00 each.

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internal combustion engine when the latter was first introduced, it has now overtaken the most efficient of them all—the Diesel engine, which for many years was the world's most efficient engine, and still is for small plants.

There are many other possible sources of power, wind, tides, waves, internal heat of the earth, temperature difference between surface and deep-sea water, solar heat, and atomic energy. But all of these are in the experimental stage, at least as far as large scale commercial production is concerned. Only one of them shows promise—the wind.

A huge windmill has just been completed and put into operation on a mountain summit, 2000 feet above sea level, in Vermont. It generates 1000 kilowatts of electric power. This windmill, as shown by the illustration on the front cover of this week's SCIENCE NEWS LETTER, has but two blades like an airplane propeller. The blades are 16 feet in maximum width and 175 feet from tip to tip—the height of a 15-story building. These blades have been designed in accordance with the most modern aerodynamic theory. The pitch or slope to the wind can be varied according to the strength of the wind and is regulated by a governor that keeps the speed constant at 30 revolutions per minute in winds from 15 to 70 miles per hour.

These are some of the ways in which modern power engineers are saving fuel and steel for our war effort.

Science News Letter, May 9, 1942

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

JACKSON, Mich.—A Science Fair was held in the auditorium of the Jackson County Building, April 27-May 2. This Fair is sponsored by the Public Schools of the City and County of Jackson and the Local Recreation Council. The Fair Committee reports that the turn-out of exhibits and visitors was very gratifying. Merit awards contributed by wellknown Jackson business concerns, clubs and other associations, have helped to make this Fair an outstanding success.

SPRINGFIELD, Mass.—You have heard of an Aquacade and a Cavalcade, but did you ever hear of a "Technicade"? That is the name for their technical science show concocted by members of the Chemistry Club at the Technical High School. The recent "Technicade" included discussions and demonstrations of chemical warfare, incendiary bombs, explosives and projects showing the distillation of crude oil, chemistry of photography, spectroscopy and plastics. The club is sponsored by Alfred R. Lincoln, chemistry teacher.

CEDAR RAPIDS, Iowa—Instead of saying "here" when a member's name is called, each person announces his presence by quoting a short scientific fact. This method of answering the roll call is practised at the S.O.S. Club (Students of Science) at Woodrow Wilson High School. Members of the club prepare exhibits for an annual science club convention, work on laboratory projects, show motion pictures and hold an annual picnic every spring and an initiation supper in the fall. The club, sponsored by Thelma Morton, also is affiliated with the State Junior Academy of Science.

BELLEVUE, Ohio—Heads of local manufacturing concerns frequently lecture to members of the Bellevue High School Science Club. This club meets every other week. At times motion pictures are exhibited to members to illustrate industrial processes and conservation programs; on other occasions laboratory and exhibit projects take up most of the meeting period. Members of the club also exhibit at the Bowling Green State Science Convention. This club is a member of the Junior Academy of Science of Ohio. Herbert E. Wolfe, chemistry and physics instructor, is the sponsor.

Clubs are invited to become affiliated with SCA for a nominal $2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

Science News Letter, May 9, 1942

GIFTS at a special reduced price for OFFICERS AND MEN in the Armed Services

Because this is a mechanical, chemical and health war, more officers and men than ever before are interested in what science is doing to help them fight . . . and in what science is doing that will affect their lives after the war. They can get such stimulating information each week from SCIENCE NEWS LETTER.

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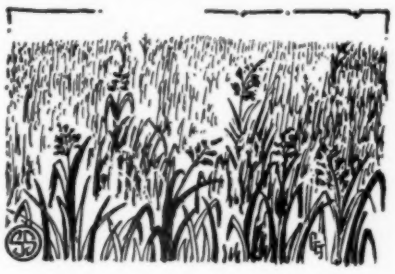
ECOLOGY

NATURE RAMBLINGS
by Frank Thone



The Prairies Remember

DROUGHT of the mid-1930's has receded so far into the past that it is nearly forgotten by most of us. But the prairies remember. Thousands of acres in the eastern third of Kansas, Nebraska and the Dakotas have had their grass cover changed radically—and for the worse, says Prof. J. E. Weaver, veteran University of Nebraska botanist.

The normal, undisturbed prairies in this region are dominated by bluestem grass species. This group of grasses, however, does not withstand drought as well as the lower-growing but tougher western wheat grass. During the thirsty years, much of the bluestem cover died out, and its place was taken by the wheat grass, which still persists.

Western wheat grass is less desirable than the bluestems, for several reasons. Of immediate economic importance is the fact that it yields smaller amounts of less nutritious feed, and hence can support fewer head of livestock on a given area. The range therefore still suffers the effects of drought, half-a-dozen years after the return of better moisture conditions.

Western wheat grass also has bad effects on the soil. It is an early-starting type of grass, and very greedy for moisture, so that it has a tendency to suck the soil dry of snow-melt and early rain water, thereby stunting and suppressing other more desirable plant species not quite so prompt in seizing the moisture supply. Soil samples taken within wheat-grass areas show from 3% to 13% less moisture than similar samples taken just outside them.

Furthermore, little ground cover of dead leaves, stems and other debris accumulates under wheat grass. This lets falling rain strike directly on bare soil, roiling the water and soon clogging the soil pores. This reduces the amount of water soaking down into the soil and increases runoff.

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GENERAL SCIENCE

Chinese Scientists on West Coast Organize

SCIENTIFIC workers in China and the United States have clasped hands across the Pacific through the organization of the United States West Coast Chapter of the Chinese Natural Science Association.

A number of Chinese scientists and technical students in Southern California have organized this new scientific society as a part of the Chinese Natural Science Association with headquarters at Chungking, China. The aim of this new organization, as announced by Dr. T. T. Chen of the University of California at Los Angeles, is the advancement of study and research in the natural sciences and the attainment of greater cooperation.

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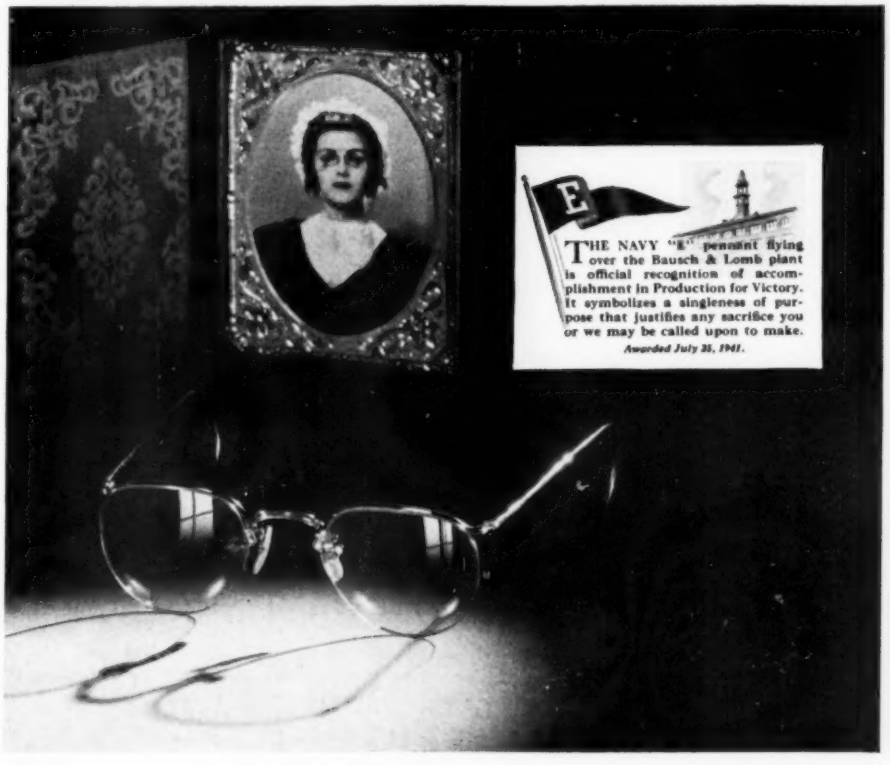
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● RADIO

Saturday, May 16, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Harry Grundfest, national secretary of the American Association of Scientific Workers, will discuss some of the things science can do and should do in connection with the war effort.

Tuesday, May 12, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

PHYSICS

Warbling Siren Proposed as Distinctive Air Raid Warning

A SIREN that warbles like a bird was proposed as a distinctive sound for air raid warnings that would readily be distinguished from the ordinary sirens on fire-engines, police wagons and ambulances, and from all the other horns and whistles that clutter up the air of a big city.

The proposal is made by Dr. Grant Hector and other scientists of the University of Buffalo, who were searching for a sound of greater attraction and less scare value.

The proposal was just a byproduct or possible application of a method devised by these scientists of varying the capacity of an electric circuit by remote control, without the use of interleaving condensers or any other mechanical moving parts. The scientists found that a fixed condenser in series with a variable resistance would do the trick. For the latter they used an ordinary radio tube. The resistance of this was varied by impressing a varying signal on the grid of the tube, which was done with the aid of an electric oscillator. This could be regulated to give from one to nine quavers per second, affording a wide variety of effects.

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Novel Things for Better Living

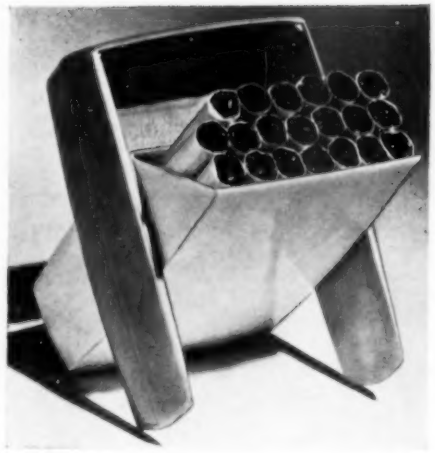
Picking up stones from a plowed field would be backbreaking exercise indeed. Fortunately there are machines for doing the job. A recently patented machine scroops up the earth, separates out the rocks and hoists them into a following trailer. The remaining earth is sifted back onto the ground. The machine can also dig up potatoes or other root vegetables.

Low temperature tubing, that remains flexible at 58 degrees below zero Fahrenheit—at which temperature rubber becomes quite brittle—and which maintains its electrical resistance at this low temperature, has been developed especially for high-flying airplanes. It is made of a transparent plastic whose strength, toughness and rubber-like qualities make it useful for a variety of industrial and electrical applications.

Non-metallic shielding for radio tubes, in place of the usual tin cans and metal partitions for the set, can be provided in the following ways. One part of concentrated colloidal graphite is diluted with two parts of distilled water and painted or sprayed directly on the glass tubes. This forms a conductive coating. Ground connection is made by a loop of wire around the tube. Or ordinary cardboard mailing tubes may replace the tin cans. In this case the colloidal graphite should be diluted with ten parts of distilled water and several coats applied and allowed to soak in. In the same way conducting cardboard partitions may be prepared.

A prehensile screwdriver that will pick up a small screw and a washer and neatly insert them in the place where they are to go has recently been patented. Conversely, with its long shank, it will extract a screw from an inaccessible place and hold it until the operator wishes to release it. This screwdriver does not depend on magnetism, but on a clamping device that is operated from the handle.

A coffee maker of the dripolator type in which the hot water goes up through the handle instead of up through a tube in the middle, is the subject of a recent patent. The handle is also provided with a hinge so that the coffee basket can be turned up out of the way, when the dripolating is finished, and the middle vessel containing the coffee can be removed. The basket can then be returned to its former position and any further drippings from it will fall into the hot water container below. This solves the problem of the usual glass coffee maker of what to do with the top part after the coffee is made.



The cigaret case shown in the illustration can be carried in the pocket and then opened out like an easel and stood up on the table, with the cigarets in easy reach. It is made of a lightweight lustrous plastic and comes in a variety of two-color combinations. It is ornamental as well as useful.

The perfect electric iron has perhaps arrived. Not only is the temperature automatically maintained constant and uniform while ironing, with a choice of three or four temperatures controlled by a knob, but complete insurance against the hazard of fire is now added by an invention just patented. The new device cuts off the current completely if the iron should be inadvertently left standing in the horizontal or ironing position. The device does not work if the iron is left standing upright on its heel stand. And, too, it does not work if the iron, though horizontal, is kept moving back and forth in the process of ironing. The device is packed into the body of the iron along with the temperature control mechanism.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 103.*

Science News Letter, May 9, 1942

Except for a higher concentration of magnesium and a lower concentration of potassium, *sea water* has the same mineral composition as blood serum.

Greek *"incendiary bombs,"* probably a mixture of petroleum and quicklime, kept invaders from Constantinople for a thousand years.

LEARN SPANISH BY PLAYING CARDS

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We think this is what they meant

154 YEARS AGO, the men who drew up the Constitution of the United States wrote into it this phrase: "To provide for the common defense, to promote the general welfare."

Just what did they intend these words to mean—the men who helped guide the first faltering steps of a new nation?

We believe this is what they meant:

That in times of peace, it was the duty of all individuals and all industries continually to exercise their skill and ingenuity for the benefit of the "general welfare"—so that Americans everywhere could live healthier, happier, better lives.

We think they meant that, should American democracy ever be threatened, the defense of that democracy then became the responsibility of every man and woman in the United States.

Because we at Westinghouse believe this is the meaning of those words from the Constitution, we have lived and worked by them—and are living and working by them today.

Westinghouse contributions to the general welfare and the common defense are many and varied. The products of Westinghouse "know how" range all the way from tiny bulbs for medical instruments to thousand-ton generators for hydroelectric power plants. And now, devoting itself to wartime needs, that same "know how" provides tank and plane equipment, binoculars, bomb fuses, torpedo tubes, battleship turbines, electrical instruments, and weapons of many kinds.

From engineering and science comes our "know how"

What is this Westinghouse "know how"? It is the teamwork and experience of skilled workmen, blended with the knowledge and imagination of engineers. It is the ability to get things done in the best possible way. In war, as in peace, Westinghouse engineering and science are the guiding forces of our "know how."

Already these men have turned over many inventions and improvements to our armed forces. And this work will continue—day and night—until America writes the peace that ends the war.

Westinghouse

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, PITTSBURGH, PA.

First Glances at New Books

PSYCHOLOGY

ESCAPE FROM FREEDOM—Erich Fromm—*Farrar & Rinehart,* 305 p., $2.50. An important contribution to the understanding of the basic causes of Nazism and the personality factors of modern man which determine his choice between fascism and democracy. Writing in a brilliant and readable style, Dr. Fromm has used the psychoanalytic as well as the sociological approach in formulating his original and illuminating thesis.

Science News Letter, May 9, 1942

PSYCHIATRY

MENTAL HYGIENE FOR COMMUNITY NURSING—Eric Kent Clarke—*Univ. of Minn. Press,* 262 p., $3.50. See page 297.

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ETHNOGRAPHY

THE CROW LANGUAGE, Grammatical Sketch and Analyzed Text—Robert H. Lowie—*Univ. of Calif. Press,* 141 p., $1.50. A careful study of one of the more important of the Siouxan languages, built mainly around an analysis of the story of Old Woman's Grandchild.

Science News Letter, May 9, 1942

TECHNOLOGY

MODERN PLYWOOD—Thomas D. Perry—*Pitman,* 366 p., illus., $4.50. More and more we are using plywood where we used to use boards—and now we are going to use it where we have been using sheet metal. This book, which tells what it is and how it is made, will introduce even the experienced user to new possibilities that may never have occurred to him. Appropriately enough, the covers are made of plywood.

Science News Letter, May 9, 1942

GEOLOGY

THE PALEOZOIC AND RELATED ROCKS OF SOUTHEASTERN MINNESOTA—Clinton R. Stauffer and George A. Thiel—*Univ. of Minnesota Press,* 261 p., $4. Detailed treatment of the older stratified rocks of a limited but geologically highly important area.

Science News Letter, May 9, 1942

SOCIOLOGY

THE STRENGTH OF NATIONS, A Study of Social Theory—George Soule—*Macmillan,* 268 p., $2.50. Science, says the author, is as capable of illuminating human society as of analyzing the nature of the physical world. It is also capable of altering human action in social relationships just as it has altered them in the use of mechanical forces. He proposes creation of a social science center, staffed by persons competent in all the social sciences including psychiatry, to which both government and private institutions could apply for advice in solving their problems. Thus problems such as unemployment, crime, insanity, poverty, and war might be solved. He urges "vaccination" against mental infections by some means of strengthening the appropriate antibodies in the emotional circulation—that is by a telling analysis of the disease carried by any enemy of society. There should also, he says, be isolation of such public mental disease carriers. "Surely," he says, "a man who has to be confined because he may commit suicide or murder his wife is no more dangerous to human life than a potential Hitler."

Science News Letter, May 9, 1942

NATURAL HISTORY

FOUR YEARS IN PARADISE—Osa Johnson—*Lippincott,* 345 p., illus., $3.50. Mrs. Martin Johnson tells fascinatingly of a long sojourn on the shores of Lake Paradise in Africa, where no white woman had ever been before. One doesn't know which to admire most—the absorbing narrative or the superb pictures.

Science News Letter, May 9, 1942

MATHEMATICS—ENGINEERING

ELEMENTARY MATHEMATICS FOR ENGINEERS—Sir Ambrose Fleming—*Chemical Pub. Co.,* 110 p., diagrs., $2.50. (Price increased from $2.)

Science News Letter, May 9, 1942

DAIRY INDUSTRY

AN ANALYSIS OF STATE LAWS DESIGNED TO EFFECT ECONOMIC CONTROL OF THE MARKET MILK INDUSTRY—Edward L. Rada and D. B. DeLoach—*Oregon State College,* 72 p., 50c. A study that should have considerable value to dairymen, to handlers and shippers of milk and its products, and to legislators and executives having to do with the regulation of the complex traffic between country cow and city consumer.

Science News Letter, May 9, 1942

CHEMISTRY

CHEMICAL SOLUTIONS, Reagents Useful to the Chemist, Biologist, and Bacteriologist — Frank Welcher — *Van Nostrand,* 404 p., $4.75.

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GENERAL SCIENCE

SCIENTISTS FACE THE WORLD OF 1942—Karl T. Compton, Robert W. Trullinger and Vannevar Bush — *Rutgers Univ. Press,* 80 p., $1.25. Addresses of the 175th Anniversary celebration of Rutgers. Dr. Bush presents the case for biological engineering, Dr. Trullinger discusses the engineering aspects of agriculture for the present and the future, President Compton outlines the application of science to the war effort.

Science News Letter, May 9, 1942

ZOOLOGY

A LABORATORY MANUAL FOR ELEMENTARY ZOOLOGY—W. Byers Unger and C. E. Moritz—*Ginn,* 104 p., $1.25.

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TRAVEL

SHIMBAL; Vol. 1, no. 1, December, 1941—Quarterly review, Organ of the *Comite Estatal Pro-Turismo de Yucatan,* P. O. Box 403, Mérida, Yucatan, Mexico, 50c. (Mexican) per issue. An interesting contribution to friendship and contact between the American republics; for here is a new illustrated magazine in Spanish and English with a Maya title ("Shimbal" means to walk, to stroll). Articles in this first issue discuss the Yucatan portion of the Pan-American highway, scenery and caves, the ruined Maya city of Uxmal, and colonial arches in Mérida.

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ELECTRICAL ENGINEERING

AUTOMATIC RECORD CHANGERS AND RECORDERS — John F. Rider — *John F. Rider Publisher, Inc.,* 723 p., illus., $6. This work is intended for the radio servicemen and aims to acquaint him with all makes and types of phonograph record changers.

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HYGIENE

HEALTH STORIES AND PRACTICE, 256 p.; HEALTH BY DOING, 334 p.; BUILDING FOR HEALTH, 328 p.; THE BODY AND HEALTH, 328 p.—William E. Burkard, Raymond L. Chambers and Frederick W. Maroney—*Lyons & Carnahan,* illus., 88c. each. A series of health education books for children at successive stages from primary through upper elementary grades. The emphasis in all four books on action should succeed in its object of having the children translate what they learn into healthful living.

Science News Letter, May 9, 1942